

## **SREE 2017 Symposium Proposal:**

### **Social effects of school choice programs**

**Chair:** Patrick J. Wolf, PhD ([pwolf@uark.edu](mailto:pwolf@uark.edu)), *The University of Arkansas, Fayetteville, AR*

**Discussant:** Philip Gleason, PhD ([PGleason@mathematica-mpr.com](mailto:PGleason@mathematica-mpr.com)), *Mathematica Policy Research*

**First Choice of Conference Section:** Effects of Educational Policies

**Second Choice of Conference Section:** Research Methods

### **Symposium Justification:**

School choice reforms are increasingly common across the U.S. This symposium summarizes and presents the most recent research on the social effects of private school choice programs and public charter schools. All three papers consider heterogeneity in effects that can and should inform policymaking.

The first paper discusses novel research on estimating an equilibrium model of charter school entry and school choice. From a social standpoint, the paper shows that the existence of charter schools yields net benefits.

The second paper studies the fiscal effects of reduced funding in a statewide voucher program. This paper adds to the literature by comparing the short-term and long-term savings to the state and individual public school districts due to this policy. The results show that the voucher program generates net cost savings in the long run for almost all educational jurisdictions under reasonable assumptions.

The third paper is a benefit/cost analysis of the best available research on private school vouchers. This benefit/cost analysis provides the most comprehensive look at the achievement effects of school voucher programs using lottery-based research designs both in the U.S. and internationally.

Combining these three papers into a symposium is a unique opportunity to compare and contrast the successes and weaknesses of social effects of school choice. For example, the first paper argues that raising the supply of prospective entrants in charter schools while maintaining strict approval standards is welfare-enhancing. The second paper addresses the question of taking into account the long-term savings of voucher programs and the third paper argues that null findings for achievement effects in voucher programs should be viewed from a benefit/cost perspective, especially given mandatory schooling laws in many countries.

This symposium maximizes the relevance, effectiveness and rigor in education research regarding the two main types of school choice: charter schools and private school vouchers.

**Paper Presentation Order (presenter's name in bold):**

Paper 1: Charter School Entry and School Choice: The Case of Washington, D.C.

**Maria Marta Ferreyra** ([mferreyra@worldbank.org](mailto:mferreyra@worldbank.org)), *The World Bank*

Grigory Kosenok ([gkosenok@nes.ru](mailto:gkosenok@nes.ru)), *New Economic School*

Paper 2: Squeezing the Public School Districts: The fiscal effects of eliminating the Louisiana Scholarship Program

Corey A. DeAngelis ([cadeange@uark.edu](mailto:cadeange@uark.edu)), *The University of Arkansas, Fayetteville, AR*

**Julie R. Trivitt** ([jtrivitt@walton.uark.edu](mailto:jtrivitt@walton.uark.edu)), *The University of Arkansas, Fayetteville, AR*

Paper 3: The juice is worth the squeeze: A benefit/cost analysis of the experimental evidence on private school vouchers across the globe.

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## **Abstract Title Page**

**Title:** Charter School Entry and School Choice: The Case of Washington, D.C.

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## **Abstract Body**

The dismal academic performance of public schools in urban school districts has been a growing concern in recent decades. Charter schools provide families with additional school choices and are seen by many as a possible solution. While the current national market share of charter schools is seemingly small (about 5 percent), it conceals large variation across states and districts.

A prospective charter entrant presents a proposal to the chartering entity. The proposal specifies the school's mission, curricular focus (such as arts or language), grades served, teaching methods, anticipated enrollment, intended facilities, and financial plan. The decision to open a charter is similar to that of opening a firm in that both seek to exploit a perceived opportunity. For example, in a residence-based system, a low-income neighborhood with low-achieving public schools creates an opportunity for a charter entrant to serve households unsatisfied with the local public schools.

In this paper we investigate charter entry and household school choice for Washington, D.C. We document charter entry by geographic area, curricular focus and grade span to gain insight into the opportunities exploited by charters. We then explore how households sort among public, private and charter schools, and how the entry, exit or relocation of a school affects others. We also study the critical role of the chartering entity (henceforth, the regulator) in this market, quantify welfare gains from charters, and investigate how the educational landscape responds to regulatory changes.

Addressing these research questions is challenging. For example, when enrolling in a new charter school, a student affects the peer characteristics of both his new and former school. Thus, charter entry triggers equilibrium effects as students re-sort among schools. Although the entrant can specify some school aspects, like thematic focus and educational philosophy, student body composition is largely beyond its control. Uncertainty about charter demand poses an additional research challenge. This uncertainty is more severe for new entrants, whose ability to run the enterprise may be unknown. Further, the entry, exit or relocation of one school affects others and leads to student re-sorting.

Thus, we develop and estimate an equilibrium model of household school choice, charter school entry and school interaction in a large urban school district. We estimate the model using a unique and detailed data set for Washington, D.C. from 2003 to 2007. The main data set contains information for all public, private and charter schools in the city including enrollment by grade, school demographics, focus and proficiency rates in standardized tests. We supplement these data with neighborhood-level information on charter school attendance and travel distance to charter and public schools. Lacking student-level data, we further augment the school-level data with the block-group level empirical distribution of child age, race, poverty status and family income. We estimate the model in three stages corresponding to student demand, school supply and school proficiency rates.

We model schools as differentiated products. We allow for a school-grade-year quality component (such as teacher quality) observable to households but not to the researcher. Exploiting our panel data, we include school, grade and year fixed effects to capture some variation in the unobserved quality component; the school fixed effects are our estimates of school quality. When estimating the proficiency rate function we estimate a separate set of school fixed effects; these constitute our measure of school productivity.

To study charters facing the same institutional structure, we focus on a single urban district. We chose Washington, D.C. because it has a permissive 1996 charter law, under which charters have grown to capture 44 percent of total public school enrollment in 2015-2016. Further, D.C. has a single public school district, which facilitates research design and data collection. Because D.C. is relatively large and has substantial variation in household demographics, it provides scope for charter entry.

The majority of charter entrants in D.C. have located in the disadvantaged areas of the city, namely the Northeast and Southeast, which are home to most of the poor, non-white students, and to the lowest-proficiency public schools. Most charter entrants offer elementary and middle school grades and a specialized curriculum. Poor, non-white students have access to fewer school options than their more advantaged counterparts at all grade levels, but particularly at middle and high school.

Our estimates show that poor, non-white students have the strongest preference for charters. They also show that many students have a preference for specialized curricula, of which public and private schools offer little. Based on our estimates, in the Northeast and Southeast charters have, on average, higher school quality than public schools, particularly for middle and high school, and higher school productivity, particularly in elementary and middle schools. Such quality and productivity differences are largest in the most disadvantaged area, namely the Southeast.

The ensuing combination of household preferences, characteristics, and choice sets, along with the geographic distribution of school options, quality, and productivity is closely associated with the observed charter entry patterns. These patterns are also associated to charter fixed costs, which are highest in the most affluent parts of the city (due to high real estate costs) and in the most disadvantaged (due to facilities' condition and to high security and insurance costs). Further, fixed costs are higher for high school than for lower grades.

From a social standpoint, the existence of charter schools yields net benefits based on our estimates. Welfare gains from charters are highest for middle-school students, for whom charters contribute the most in quantity and quality of options, and for poor, black students in all grades.

Given these benefits, in our counterfactuals we investigate alternative avenues for charter expansion in D.C., namely, a funding increase, a relaxation of approval (authorization) standards, and policies aimed at raising the supply of prospective entrants. Our results indicate

that raising the supply of prospective entrants while maintaining strict approval standards is welfare-enhancing. Policies that facilitate the application process by aiding entrants in obtaining building facilities, developing business and instructional plans, learning from other charters and navigating bureaucratic processes can raise the supply of prospective entrants.

## **Abstract Title Page**

**Title:** Squeezing the Public School Districts: The fiscal effects of eliminating the Louisiana Scholarship Program.

### **Authors and Affiliations:**

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Department of Education Reform, University of Arkansas, Fayetteville, Arkansas, USA

## **Abstract Body**

### **Background**

Since their inception, school voucher programs have triggered some of the more contentious debates regarding school choice programs. With significant appropriations and ardent supporters on both sides of the issue, this is not surprising and the Louisiana Scholarship Program (LSP) is no exception. The LSP is a K-12 voucher program that enables low income families to send their children to private schools and is only available to students who previously attended (or entering kindergarten in) a public school that receives less than a C on Louisiana's school grading system. In the spring of 2016 the Louisiana legislature considered eliminating the program to help address a projected fiscal deficit. Rather than eliminate the program entirely, the state decided to reduce funding which resulted in a waitlist of more than 400 students in the fall of 2016.

### **Objective**

Reduced spending on a voucher program may cut state expenditures in one program, but if the students return to (or stay in) public schools that are partially state-funded, those cuts will lead to increased expenditures in other areas. In this paper we use the Louisiana Department of Education (LDE) funding formulas to estimate the projected net effect on state education expenditures, costs incurred by local districts and funding received by local districts in Louisiana likely to result from proposed changes to the LSP.

### **Data Sources and Research Design**

We utilize public reports from the LDE website that include data on the number of students using LSP vouchers, enrollment counts in each district broken down by funding categories, local education revenue by parish, and local district education expenditures across categories. We use the Louisiana school funding formula to determine the counterfactual education expenditures by the LDE and local districts for different assumptions about the percentage of LSP users returning to their residentially assigned public schools.

### **Results**

We find that if the differences in timing between the voucher program and school funding formulas are ignored, eliminating the LSP will cause a net increase in LDE expenditures unless at least 13.5% of LSP students stay in private schools without the vouchers. Furthermore, over 75% of the districts receiving the voucher students will be financially harmed as their expected

increase in costs exceeds the expected increase in state funding. On average, the net harm to districts is between \$1,016 and \$1,858 depending on which model is used.

When the estimates are adjusted to recognize the delay between when the voucher payments stop and local school funding is updated to reflect the additional students, LDE expenditures are reduced by about \$1,000,000 for the current fiscal year, but it comes at a significant cost to the local districts that former vouchers attend. When the timing delay is considered, *all* of the districts that would receive voucher users are expected to incur costs exceeding additional revenue by an average of over \$4,600 per student.

### **Conclusions**

The savings to the state of reduced funding for the LSP are a result of the timing of student counts rather than true cost efficiencies. They will generate a net cost reduction for LDE for only the current fiscal year, and will result in local districts incurring costs for educating former voucher students for half of a year before the state includes the students in updated enrollment counts for funding. In the long run, the LSP generates a net cost savings for LDE and local districts given the current fiscal structure of education funding in Louisiana.

## **Abstract Title Page**

**Title:** The juice is worth the squeeze: A benefit/cost analysis of the experimental evidence on private school vouchers across the globe.

### **Authors and Affiliations:**

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## **Abstract Body**

### **Background / Context:**

School choice has emerged as a key demand side intervention in school reform globally. School vouchers act as a market based reform by allowing parents to choose any school for their children. Both government and privately sponsored voucher programs exist. The effectiveness of voucher programs is fiercely disputed in both academic and policy circles. Eleven Randomized Control Trials (RCTs) of school vouchers have focused on student achievement. Analysis by Muralidharan et al. (2015) and Wolf et al. (2013) show that null findings in school voucher programs should be viewed from a benefit/cost perspective. A thorough benefit/cost analysis of the experimental studies of school vouchers across the globe would provide the foundation for a greater scholarly consensus regarding the ability of school vouchers to improve outcomes for students.

### **Purpose / Objective / Research Question / Focus of Study:**

The objective of this benefit/cost analysis is to rigorously assess the benefit/cost effects of private school vouchers, or in other words, to estimate the average impacts that the offer (or use) of a voucher has on a student. This review will add to the literature by being the first to systematically analyze all Randomized Control Trials (RCTs) on private school vouchers in an international context from a benefit/cost perspective. Our analytic results will focus on the RCTs because these are the “gold standard” of program evaluation in terms of assessing causal relationships. RCTs essentially compare a treatment group (those receiving the offer of a voucher) relative to a control group (those who did not receive the offer of a voucher). In RCTs the assignment of a voucher is random, and therefore the issue of selection bias is resolved in expectation.

The majority of RCTs studying the participant effects of school vouchers have been conducted in the United States. While voucher systems exist in many parts of the world, only a small number of voucher RCTs have been conducted outside the US. Therefore, we will present three benefit/cost analytic estimates of the impacts of school vouchers: (1) just in the U.S.; (2) just outside the U.S.; and (3) globally including the U.S. and all other countries.

Our initial search was guided by the following research question: *What is the impact of private school vouchers globally on the student achievement of those students offered the vouchers?*

We will also compare overall outcomes for reading and math scores for programs within the US vs. outside the US and publically funded vs. privately funded programs. This can be helpful for policymakers designing future private school voucher programs.

### **Setting:**

The RCTs included in our analysis were located in three countries: the United States of America, Colombia and India. Although this study will represent parts of three continents: North America, South America, and Asia, the majority of RTCs were administered within the United States. The U.S. studies covered programs in Charlotte, NC; Dayton, OH; Milwaukee, WI; New York City; Toledo, OH; and Washington, DC.

### **Population / Participants / Subjects:**

The participants in the RCTs were children who attended private schools through a school voucher. The grades analyzed ranged from K to 12, although most individual RCTs included a shorter grade range in their analysis. The sample sizes for treatment and control groups as well as the overall sample sizes will be reported in our study.

### **Intervention / Program / Practice:**

The programs evaluated were publically or privately funded school voucher or K-12 “scholarship” programs. Most of the private schools that participate in voucher programs in the U.S. and other countries are relatively low-cost schools with per-student costs below the average amount spent in area public schools. The duration of studies analyzed ranged from one year to seven years. The earliest program evaluated was administered in 1990 in Milwaukee, WI, and the latest program evaluated was administered in 2011 in Delhi, India.

### **Research Design:**

The research design of the studies that inform the benefit/cost analysis was random assignment of children to treatment and control groups. Most studies had a one-stage randomization through administration of a lottery while one study in Andhra Pradesh, India (Muralidharan & Sundararaman, 2015) was based on a two-stage randomization (randomly assign students within randomly assigned villages). We combine the results of the experimental studies systematically, using the impact estimates and variances reported in the actual studies, to generate overall measures of average voucher impact (inflation adjusted US dollars) along with reasonable lower and upper bounds.

### **Data Collection and Analysis:**

For this benefit/cost analysis, we relied on meta-analysis by Shakeel, Anderson, and Wolf (2016). We analyzed the voucher programs in further details estimating the cost of the program and adjusting it for comparisons. We also inflation-adjusted all the estimates for an appropriate comparison across different voucher programs.

### **Findings / Results:**

We find overall significant and positive impacts of private school voucher programs across the globe that vary by region (US vs. global), funding type (private vs. public) and age of program. As hypothesized, the analysis of null findings from benefit/cost perspective reveals that overall, private school vouchers produce similar estimates in comparison to public schools at a much lower cost. Our findings mainly accord with Muralidharan et al. (2015) and Wolf et al. (2013).

### **Conclusions:**

This benefit/cost analysis contributes to the field by combining and systematically evaluating rigorous evidence from RCT studies. This review provides a broader overview of all the rigorous experimental findings and will have important policy implications about the effectiveness of voucher programs generally. While voucher programs are growing across the globe, a benefit/cost analysis of the effect of vouchers internationally was lacking. As the first benefit/cost analysis of its type, it will help establish the baseline for future studies.

In terms of recommending policy, there are a couple different conclusions we can draw from these results. We found that in general, publicly funded programs show more positive effects, but this could be the result of several different things. For example, it could be that parents feel more satisfied with the full funded nature of publicly funded programs.

## Appendix A. References

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## Appendix B:

Table 1: Data sources for benefit/cost analysis

Study Location	Papers analyzed
Charlotte, NC, USA	Green, J. P. (2000), Cowen, J. M. (2008)
Washington, DC, USA	Howell, W. G., Wolf, P. J., Campbell, D. E., & Peterson, P. E. (2002)
Washington, DC, USA	Wolf, P. J., Kisida, B., Gutmann, B., Puma, M., Eissa, N., & Rizzo, L. (2013)
Dayton, OH, USA	Howell, W. G., & Peterson, P. E. (2000), Howell, W. G., Wolf, P. J., Campbell, D. E., & Peterson, P. E. (2002)
Toledo, OH, USA	Bettinger, E., & Slonim, R. (2003), Bettinger, E., & Slonim, R. (2006)
New York City, USA	Mayer, D. P., Peterson, P. E., Myers, D. E., Tuttle, C. C., & Howell, W. G. (2002), Howell, W. G., Wolf, P. J., Campbell, D. E., & Peterson, P. E. (2002), Barnard, J., Frangakis, C. E., Hill, J. L., & Rubin, D. B. (2003), Myers, D. E., & Mayer, D. P. (2003), Peterson, P. E., & Howell, H. G. (2003), Krueger, A. B., & Zhu, P. (2004), Howell, W. G., & Peterson, P. E. (2006), Jin, H., Barnard, J., & Rubin, D. B. (2010), Bitler, M., Domina, T., Penner, E. K., & Hoynes, H. (2015)
Milwaukee, WI, USA	Rouse, C. E. (1998), Greene, J. P., Peterson, P. E., & Du, J. (1999)
Louisiana, USA	Abdulkadiroglu, A., Pathak, P. A., & Walters, C. R. (2015)
Andhra Pradesh, India	Muralidharan, K., & Sundararaman. V. (2015)
Delhi, India	Wolf, P. J., Egalite, A. J., & Dixon, P. (2015)
Colombia	Angrist, J., Bettinger, E., Bloom, E., King, E., & Kremer, M. (2001), Bettinger, E. (2005, October), Angrist, J., Bettinger, E., & Kremer, M. (2006), Bettinger, E., Kremer, M., & Saavedra, J. E. (2010)

## Appendix C. Tables and Figures

Table 2: Description of 19 RCT Studies included in benefit/cost Analysis

Authors	Publication Year	Years of Treatment	Program Evaluated	Duration of Study	Grades	Sample Size (First Reported Outcome Year)	Program Attrition (Final Year)	Sample Attrition (Final Year)
Abdulkadrioglu, Pathak & Walters	2015	1	Louisiana Scholarship Program (LSP)	2012-2013 (1 year)	3 to 8	N/A	N/A	N/A
Angrist, Bettinger, Bloom, King & Kremer	2002	3	Programa de Ampliacion de Cobertura de la Educacion Secundaria (PACES)	1995-1999 (4 years)	6 to 9	283	10%	75.3%
Angrist, Bettinger, & Kremer	2006	7	Programa de Ampliacion de Cobertura de la Educacion Secundaria (PACES)	1994-2001 (8 years)	6 to 11	3,541	50%	12.4%
Barnard, Frangakis, Hill & Rubin	2003	1	The School Choice Scholarships Foundation Program	1997-2000 (4 years)	1 to 4	525	23.5%	22.3%
Bettinger & Slonim	2006	3	Children's Scholarship Fund	1998-2001 (4 years)	K to 8	186	N/A	92%
Bitler, Domina, Penner & Hoynes	2015	3	New York City School Choice Program	1997-2000 (4 years)	K to 4	2,080	41.3%	34.6% Reading; 35.0% Math
Cowen	2008	1	Charlotte Children's Scholarship Fund	1999-2000 (1 year)	2 to 8	347	25.5%	70%
Greene	2000	1	Charlotte Children's Scholarship Fund	1999-2000 (1 year)	2 to 8	357	51.6%	60%
Greene, Peterson & Du	1999	4	Milwaukee Parental Choice Program (MPCP)	1990-1994 (5 years)	K to 8	816	N/A	60% Treatment, 52% Control
Howell, Wolf, Campbell & Peterson	2002	3	The School Choice Scholarships Foundation Program	1997-2000 (4 years)	1 to 4	1,434	N/A	33%
Howell, Wolf, Campbell & Peterson	2002	2	Parents Advancing Choice in Education	1998-2000 (2 years)	K to 12	404	N/A	51%
Howell, Wolf, Campbell & Peterson	2002	3	Washington Scholarship Fund	1998-2001 (3 years)	K to 8	930	76%	40%
Jin, Barnard & Rubin	2010	1	New York City School Choice Program	1997-2000 (4 years)	1 to 4	525	23.5%	22.3%
Krueger & Zhu	2004	3	New York City School Choice Program	1997-2000 (4 years)	K to 4	2,080	41.3%	36.2%
Mills & Wolf	2015	2	Louisiana Scholarship Program (LSP)	2012-2014 (2 years)	3 to 8	N/A	N/A	N/A
Muralidharan & Sundararaman	2015	4	Andhra Pradesh (AP) School Choice Experiment	2008-2012 (4 years)	1 to 5	4,620	49%	20.7% English; 68.1% Hindi; 17.5% Telugu; 17.5% Math
Rouse	1998	4	Milwaukee Parental Choice Program (MPCP)	1990-1994 (5 years)	K to 8	1,343	75.5%	N/A
Wolf, Egalite & Dixon	2012	2	Ensure Access to Better Learning Experiences (ENABLE)	2011-2013 (2 years)	K to 2	1,306	11%	N/A
Wolf, Kisida, Gutmann, Puma, Eissa & Rizzo	2013	4	District of Columbia Opportunity Scholarship Program (OSP)	2004-2009 (6 years)	K to 12	1,649	17.9%	37.8% Treatment, 48.5% Control

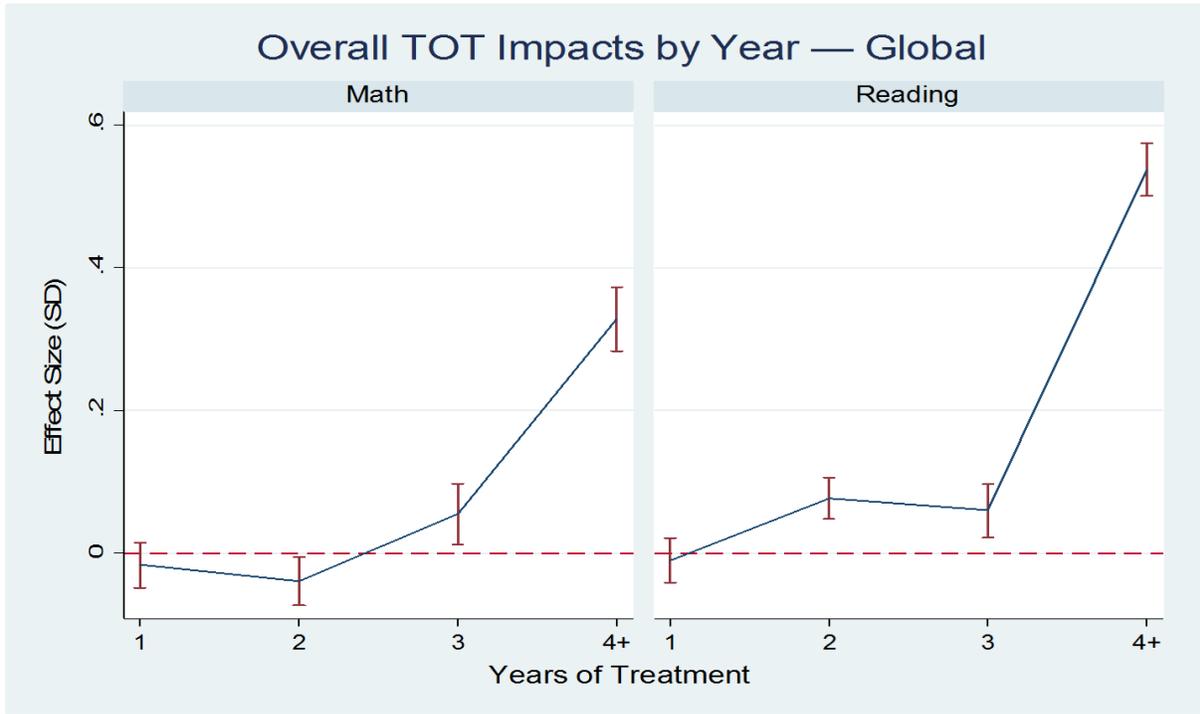
Note: The sample size and attrition rates are based on the estimates from ITT Reading with the exception of Bettinger & Slonim (2006) which had only math impacts. The actual sample sizes for calculating the ITT and TOT Reading and Math impacts may differ slightly.

Table 3: Description of 11 Voucher Programs included in benefit/cost Analysis

Program Evaluated	Location	Funding Source	Funding Amount (Full or Partial)	Grades	Studies Cited
Andhra Pradesh (AP) School Choice Experiment	Andhra Pradesh, India	Private	Full	1 to 5	Muralidharan & Sundararaman (2015)
Charlotte Children's Scholarship Fund	Charlotte, NC (USA)	Private	Partial	2 to 8	Greene (2000); Cowen (2008)
Children's Scholarship Fund	Toledo, OH (USA)	Private	Partial	K to 8	Bettinger & Slonim (2006)
District of Columbia Opportunity Scholarship Program (OSP)	Washington, DC (USA)	Public	Full	K to 12	Wolf, Kisida, Gutmann, Puma, Eissa & Rizzo (2013)
Ensure Access to Better Learning Experiences (ENABLE)	Delhi, India	Private	Full	K to 2	Wolf, Egalite & Dixon (2015)
Louisiana Scholarship Program (LSP)	Louisiana (USA)	Public	Full	3 to 8	Abdulkadiroglu, Pathak & Walters (2015); Mills & Wolf (2016)
Milwaukee Parental Choice Program (MPCP)	Milwaukee, WI (USA)	Public	Full	K to 8	Rouse (1998); Greene, Peterson & Du (1999)
Parents Advancing Choice in Education	Dayton, OH (USA)	Private	Partial	K to 12	Peterson, Howell, Wolf & Campbell (2003)
Programa de Ampliacion de Cobertura de la Educacion Secundaria (PACES)	Bogota, Colombia	Public (partly funded by World Bank)	Partial	6-9 (2002 paper) and 6-11 (2006 paper)	Angrist, Bettinger, Bloom, King & Kremer (2002); Angrist, Bettinger, & Kremer (2006)
School Choice Scholarships Foundation	New York, NY (USA)	Private	Partial	1 to 4	Peterson, Howell, Wolf & Campbell (2003); Barnard, Frangakis, Hill & Rubin (2003); Krueger & Zhu (2004); Jin, Barnard & Rubin (2010); Bitler, Domina, Penner & Hoynes (2015)
Washington Scholarship Fund	Washington, DC (USA)	Private	Partial	K to 8	Peterson, Howell, Wolf & Campbell (2003)

Note: Studies do not necessarily contain all years of a program. See Table 2 for more details at the study level.

Figure 1:



Note: Hedges'  $g$  estimates are based on one year effect, two year effect, three year effect and four or more year effect size calculated for each study. The effect size and confidence interval for each year are plotted vertically.